

6TH-8TH GRADE SCIENCE EXIT EXPECTATION BOXES

EARTH SCIENCE

■ **WEATHER**

- *Explain how heat, moisture, and air movement determine weather*
- *Understand that the Sun's energy drives the water cycle and that the water cycle is a continuous process of recycling*
- *Demonstrate wind flow from high pressure areas to low pressure areas*
- *Analyze how temperature, pressure, and the Coriolis Effect cause wind and water currents*
- *Describe how global atmospheric movement influences local weather*
- *Examine how geographic features affect climates*
- *Know the composition and structure of the Earth's atmosphere*
- *Investigate how the greenhouse effect leads to global warming*
- *Explain standard safety procedures used regarding various natural disasters*
- *Explain how the tilt of the earth determines seasons and length of day*

■ **SPACE**

- *Understand how the force of gravity keeps the planets and other bodies in orbit*
- *State Newton's Laws of Gravitation*
- *Explain orbital motion of objects in the solar system*
- *Understand that stars give off light and produce energy by nuclear fusion*
- *Realize that light years and astronomical units are used to measure distance in space*
- *Understand how humans use technology to explore space*
- *Know what characteristics of a planet support life*
- *Know that billions of galaxies exist in the universe*

■ **EARTH'S STRUCTURE/COMPOSITION**

- *Know the components of soil and other factors that influence soil texture, fertility, and resistance to erosion*
- *Communicate that the Earth is comprised of layers including a core, mantle, lithosphere, hydrosphere, and atmosphere*
- *Identify the characteristics of sedimentary, igneous, and metamorphic rocks and know the formation process*
- *Know the interrelationship involved in the process of the rock cycle*
- *Know that the fossils contained in the successive layers of rock can be used to confirm the age, history, and changing life forms of the Earth*

■ **CHANGES IN THE EARTH**

- *Know that successive layers of sedimentary rock are affected by folding, breaking, and uplifting of layers*
- *Know that land forms are created through constructive and destructive forces*
- *Know that the Earth's crust is divided into plates that move in response to mantle movement*

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PHYSICAL SCIENCE

■ SOUND AND LIGHT

- *Demonstrate that light travels in straight lines unless reflected or refracted*
- *Identify visible light as one component of the electromagnetic spectrum*
- *Demonstrate that light interacts with matter by transmission, absorption, or reflection*
- *Demonstrate that light can be reflected with mirrors or refracted with lenses*
- *Explain how the Sun is the major source of energy for the Earth*
- *Demonstrate that light is essential for vision*
- *Demonstrate how things that absorb light often transmit heat*
- *Identify and explain that photosynthesis is the process of using light to make food*
- *Observe and demonstrate that sound is affected by the matter through which it travels*
- *Describe how sound travels in waves*
- *Explain that sound waves have wave length, frequency, and amplitude*
- *Demonstrate how the ear is a receptor for sound*

■ MATTER

- *Know the major ideas of atomic theory and molecular theory*
- *Know the history and development of the present atomic model*
- *Model how all matter is composed of atoms, consisting of protons, neutrons, and electrons*
- *Describe physical and chemical interactions among substances*
- *Develop an understanding of the physical and chemical properties of matter*
- *Realize that particles of matter are in constant motion, and when heated, the motion of the molecules increases and they move farther apart*
- *Understand the flow of electrons in bonding*
- *Understand how each element is represented on the Periodic Table*
- *Know the organization of the Periodic Table*
- *Know the materials that contain equal numbers of positive and negative charges are electrically neutral*

- *Realize that any change in the balance of charges produces an electric force proportional to the charge*
- *Know that electromagnetic forces exist with and between atoms*

■ FORCES, MOTION, AND ENERGY

- *Investigate the motion of objects and explain motion in terms of speed, velocity, acceleration, momentum, and Newton's Laws of Motion and their application to real-life situations*
- *Identify the Law of Conservation of Energy*
- *Explain how gravitational force is applied*
- *Explain that nuclear forces are stronger than electromagnetic forces, which are stronger than gravitational forces*
- *Demonstrate how machines can be used to do work more efficiently*
- *Investigate how work can be measured*
- *Identify how devices have been designed to convert energy from one form to another*
- *Give a basic explanation of the gas laws, Archimedes Principle, and Bernoulli's Principle and recognize their real-life applications*
- *Describe and investigate the properties of light, heat, gravity, magnetic fields, electrical fields and sound waves and their interactions with common objects*
- *Infer that as energy transformations occur, some energy escapes as heat, sound, or light*
- *Be aware of decisions about the future of energy resources*

■ ELECTRICITY AND MAGNETISM

- *Explain that electric currents can produce magnetic forces and magnets can produce electric currents*
- *Explain the relationship between magnetic forces and electric forces*
- *Identify the role of electromagnetic forces in electric motors, generators, radio, television, and other technologies*
- *Observe that different materials act as insulators and conductors of electrical current*

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LIFE SCIENCE

■ ANIMALS

- *Classifications*
 - Identify different taxonomic groups of the Animal Kingdom
- *Cycles*
 - Know that sexual reproduction results in the continuation of the species
 - Describe the basic life processes that all animals carry out.
- *Characteristics*
 - Know that animals have a variety of body structures with specific functions for survival

■ PLANTS

- *Characteristics*
 - Describe the chemical process of photosynthesis
- *Life Cycles*
 - Discover that plants carry on basic life processes
 - Understand that sexual and asexual reproduction are necessary for the continuation to the species
- *Classification*
 - Compare and contrast monocots and dicots
 - Identify various plant tissues and explain their function
 - Describe how plants are producers
- *Adaptations*
 - Know that plants have a variety of body structures with specific functions for survival
 - Explain plant responses to environmental stimuli

■ ENVIRONMENT

- *Habitats*
 - Understand that through the process of succession, communities change over time
 - Describe the eight biomes in terms of their distinct biotic and abiotic characteristics
- *Adaptations*
 - Recognize how things evolve
 - Know the process of natural selection
 - Know the history of the Theory of Evolution

■ HUMAN BODY

- *Explain that a human being has interactive systems*
- *Know that humans carry on basic life processes*
- *Describe how disease is caused by internal and external factors*
- *Understand homeostasis*
- *Describe the stages of development of a growing embryo and fetus*

■ CELLS, HEREDITY AND CLASSIFICATION

- *Realize that both heredity and the environment contribute to the development of living things*
- *Know that organisms are classified based on similarities that reflect their evolutionary relationships*
- *Identify the levels of organization in living things: cells, tissues, organs, systems, and organisms*
- *Know the structure and function of the different parts of a cell*
- *Describe how chromosomes are contained in both egg and sperm and carry instructions for the new individual*
- *Model how an inherited trait is determined by one or more genes using a Punnet Square*
- *Know the chemical and structural properties of DNA and its role in specifying the characteristics of an organism within an organism*